

Name: \_\_\_\_\_

### Remediation – Solving Linear Systems with Opposite Coefficients

After you have watched the video from the wiki, you should try the following problems and then use the key to check your work. You should use your calculator to check your answer before you use the answer key so that you practice trouble shooting your own work.

Directions: Please solve the following linear systems. Express any non-integer answers as non-mixed fractions.

1. 
$$\begin{cases} 2x - 7y = 13 \\ 7x + 7y = -49 \end{cases}$$

$$\begin{array}{r} 2x - 7y = 13 \\ 7x + 7y = -49 \\ \hline -5x = -36 \\ \frac{-5x}{-5} = \frac{-36}{-5} \\ x = \frac{36}{5} \end{array}$$

$x = -4$

$$\begin{array}{r} 2(-4) - 7y = 13 \\ -8 - 7y = 13 \\ -7y = 21 \\ \frac{-7y}{-7} = \frac{21}{-7} \\ y = -3 \end{array}$$

$(-4, -3)$

2. 
$$\begin{cases} -x - 4y = -42 \\ x + 8y = 90 \end{cases}$$

$$\begin{array}{r} -x - 4y = -42 \\ x + 8y = 90 \\ \hline -4y = 48 \\ \frac{-4y}{-4} = \frac{48}{-4} \\ y = -12 \end{array}$$

$(-6, 12)$

$$\begin{array}{r} x + 8(-12) = 90 \\ x - 96 = 90 \\ x = 186 \end{array}$$

$x = -6$

3. 
$$\begin{cases} 8x - 3y = 2 \\ 12x + 3y = 15 \end{cases}$$

$$\begin{array}{r} 8x - 3y = 2 \\ 12x + 3y = 15 \\ \hline 20x = 17 \\ \frac{20x}{20} = \frac{17}{20} \\ x = \frac{17}{20} \end{array}$$

$x = \frac{17}{20}$

$$\begin{array}{r} 8(\frac{17}{20}) - 3y = 2 \\ \frac{34}{5} - 3y = 2 \\ -3y = 2 - \frac{34}{5} \\ -3y = \frac{10}{5} - \frac{34}{5} \\ -3y = -\frac{24}{5} \\ \frac{-3y}{-3} = \frac{-24}{5} \cdot \frac{1}{3} \\ y = \frac{8}{5} \end{array}$$

$(\frac{17}{20}, \frac{8}{5})$

4. 
$$\begin{cases} 5x - 2y = 5 \\ 7y - 5x = 12 \end{cases}$$

$$\begin{array}{r} 5x - 2y = 5 \\ -5x + 7y = 12 \\ \hline 5y = 17 \\ \frac{5y}{5} = \frac{17}{5} \\ y = \frac{17}{5} \end{array}$$

$(\frac{59}{25}, \frac{17}{5})$

$$\begin{array}{r} 7(\frac{17}{5}) - 5x = 12 \\ \frac{119}{5} - 5x = 12 \\ -5x = 12 - \frac{119}{5} \\ -5x = \frac{60}{5} - \frac{119}{5} \\ -5x = -\frac{59}{5} \\ \frac{-5x}{-5} = \frac{-59}{5} \cdot \frac{1}{-5} \\ x = \frac{59}{25} \end{array}$$

5. 
$$\begin{cases} 2x - 5y = 12 \\ -2x + 5y = 30 \end{cases}$$